LOBANOV, Yu.V.; KUZNETSOV, V.I.; PERELYGIN, V.P.; POLIKANOV, S.M.; OGANESYAN, Yu.TS.; FLEROV, G.N.

Spontaneously fissionable isomer with a half-life of $0.9 \cdot 10^{-3}$ sec. (MIRA 18:7)
IAd. fiz. 1 no.1:67-71 Ja '65.

1. Ob"yedinennyy institut yadernykh issledovaniy.

L 06498-67 EWT(m)
ACC NR: AP7000462 SOURCE CODE: UR/0367/66/004/001/0099/0101

KUZNETSOV, V. I.; SKOBELEV, N. K.; FLEROV, G. N.

"Observation of a Spontaneously Fissionable Isomer with $T_{1/2}$ = 2.6 min in the Nuclear Reactions $U^{233} + B^{11}$ and $U^{233} + B^{10}$"

Moscow, Yadernaya Fizika; July, 1966; pp 99-101

ABSTRACT: In the nuclear reactions $U^{233} + B^{10}$ and $U^{233} + B^{11}$ a spontaneously fissionable product with $T_{1/2} = 2.6 \pm 0.2$ min was observed. The excitation function of this product in the reaction $U^{233} + B^{11}$ was investigated. The maximum production cross section was found to be of the order $2 \cdot 10^{-33}$ cm^2. The conclusion was drawn that the Am nucleus or that of another lighter element with mass number $A \leq 236$ undergoes a spontaneous fission with $T_{1/2}$ = 2.6 min. The experiments were performed on the internal beam of the U-300 cyclotron of the Joint Institute for Nuclear Research. The authors thank K. A. Gavrilov and coworkers of his group for preparation of the targets, B. V. Shchitov for helping with the work, S. M. Polikanov and V. A. Druin for useful advice during the carrying out of experiments and for valuable discussion, and S. P. Tret'yakova and T. I. Rubakova, who carried out much work on the processing of the detectors. Orig. art. has: 2 figures. [Based on authors' Eng. abst.] [JPRS: 37,330]

ORG: Joint Institute for Nuclear Research (Ob"yedinnyy institut yadernykh issledovanniy)
TOPIC TAGS: nuclear reaction, isomer, cyclotron
SUB CODE: 20 / SUBM DATE: 27Dec65 / ORIG REF: 002
Card 1/1 mlf

0923 1166

L 29280-66 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6019332 SOURCE CODE: UR/0367/66/003/003/0455/0456

33
B

AUTHOR: Markov, B. N.; Plev, A. A.; Polikanov, S. M.; Flerov, G. N.

ORG: Joint Institute of Nuclear Research (Ob"yedinenyy institut yadernykh issledovaniy)

TITLE: Experiments on the synthesis of a spontaneously fissionable isomer in the Am sup 241 (n, gamma) Am sup 242 reaction 19

SOURCE: Yadernaya fizika, v. 3, no. 3, 1966, 455-456

TOPIC TAGS: americium, isomer, thermal neutron

ABSTRACT: The creation 27 of a spontaneously fissionable Am^{242m} isomer in reactions with thermal neutrons was investigated. It is shown that the cross-section of this process is less than $3 \cdot 10^{-28}$ cm^2 and the isomer ratio $\alpha < 5 \cdot 10^{-7}$. Authors' thank K. A. Gavrilov for preparation of the target and A. M. Kucher and I. V. Saratov for help in conducting the experiments. [Based on authors' Eng. abst.] [JPRS]

SUB CODE: 20 / SUBM DATE: 10Sep65 / ORIG REF: 004 / OTH REF: 003

Card 1/1 CC

L 33757-66 EWT(m)
ACC NR: AP6025838 SOURCE CODE: UR/0089/66/020/003/0230/0232

AUTHOR: Zager, B. A.; Miller, M. B.; Mikheyev, V. L.; Polikanov, S. M.; Sukhov, A. M.; Flerov, G. N.; Chelnokov, L. P.

50
B

ORG: none

TITLE: Properties of the 102 sup 254 isotope 19

SOURCE: Atomnaya energiya, v. 20, no. 3, 1966, 230-232

TOPIC TAGS: isotope, cyclotron, half life, particle physics

ABSTRACT: Isotope 102^{254} has been produced on the external beam of the 150 centimeter OIYaI cyclotron following the $Am^{245}(N^{15}, 4n)102^{254}$ reaction. It was established by recording the α-decay of the primary and daughter nuclei that the half-life of this isotope is within the 20-50 sec interval, while the energy of the emitted α particles is equal to 8.10 ± 0.05 MeV. The new results are in disagreement with the data found in literature ($T_{1/2} = 3$ sec, and $E_\alpha = 8.3$ MeV). The authors thank the collective that worked on the accelerator: A. F. Linev, I. A. Shelayev, and V. S. Alfayev for checking the efficiency of the cyclotron; K. A. Gavrilov for preparing the target, which was stable under very intense beams; and V. A. Chugreyev for carrying out the construction work. They also thank Doctor of Physicomathematical Sciences I. G. Gverdtsiteli, who provided the isotope N^{15}; V. I. Kuznetsov, A. G. Smirnov-Amrin, and A. G. Kozlov, who guaranteed the receipt of Am^{243} for the target. Finally, they thank A. G. Belov, V. I. Ilyushchenko and V. I. Nikolayev for help in conducting the experiments. Orig. art. has: 2 figures. [JPRS: 36,139]

SUB CODE: 18, 20 / SUBM DATE: 15Dec65 / ORIG REF: 006 / OTH REF: 005

Card 1/1 UDC: 546.799.52

0916 0916

ACC NR: AP7013698 SOURCE CODE: UR/0367/67/005/002/0271/0273

AUTHOR: Kuznetsov, V. I.; Skobelev, N. K.; Flerov, G. N.

ORG: Joint Institute for Nuclear Research (Ob"yedinennyy institut yadernykh issledovaniy)

TITLE: Study of spontaneously fissionable products in the nuclear reactions $Th^{230} + B^{10}$ and $Th^{230} + B^{11}$

SOURCE: Yadernaya fizika, v. 5, no. 2, 1967, 271-273

TOPIC TAGS: nuclear fission, nuclear cross section, radioactive decay, half life, nuclear isomer, cyclotron, fission product / U-300 cyclotron

SUB CODE: 20,18

ABSTRACT: Spontaneous fission with the half-life $T_{1/2} = 2.6 \pm 0.2$ min was detected in the nuclear reactions $Th^{230} + B^{10}$ and $Th^{230} + B^{11}$. The excitation functions and formation cross sections of this product were studied. Spontaneous fission with a different half-life $T_{1/2} = 1.4 \pm 0.25$ min was observed when Th^{230} was bombarded by B^{10} ions with the energy 82 MeV and higher. A hypothesis is advanced that the 2.6 min decay is due to the spontaneous decay of Am^{234} in an isomer state. The experiments

Card 1/2 0933 2153

ACC NR: AP7013698

were performed on the internal beam of the U-300 cyclotron. The authors thank B. A. Gvozdev and Yu. S. Korotkin for preparing the targets. They also thank V. P. Perelygin and coworkers of his group for preparing and processing the detectors, and A. G. Pil'kov and B. V. Shchitov for help in the work. Orig. art. has: 3 figures and 2 formulas. [Based on authors' Eng. Abst.] [JPRS: 40,570]

Card 2/2

FLEROV, K.K.

[Musk deer and deer] Kabargi i oleni. Moskva, Izd-vo Akademii nauk SSSR, 1952. 255 p. (Fauna SSSR no.55). (MLRA 7:2)
(Deer)

1. FLEROV, K. K.

2. USSR (600)

4. Mongolia - Ungulata, Fossil

7. Pantodonta collected by the Mongolian Paleontological Expedition of the Academy of Sciences of the U.S.S.R. Trudy Paleont. inst. 41, No. 1, 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

FLEROV, K. K. and PIDOPLICHKO, I. G.

"New Forms of Deer from the Pliocene of Southern Ukraine," Dokl. AN SSSR, 84, No.6, 1952

1. FLEROV, K. K.

2. USSR (600)

4. Dinocerata--Mongolia

7. New Dinocerata from Mongolia. Dokl. AN SSSR 86 no. 5 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

1. FLEROV, K. K.

2. USSR (600)

4. Mongolia - Dinocerata

7. New Dinocerata from Mongolia. Dokl. AN SSSR. 87, no. 5, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

FLEROV, K.K., professor.

Unicorn-Elasmotherium. Priroda 42 no.9:110-112 S '53. (MLRA 6:8)

1. Paleontologicheskiy muzey Akademii nauk SSSR. (Rhinoceros)

260T46

FLEROV, K. K.

USSR/Geology - Paleontology 21 May 53

"New Findings of Traces of Vertebrates in the Dobrotovskiy Layers in the Carpathian Foothills," O. S. Vyalov and K. K. Flerov, Active Members Acad Sci Ukrainian SSR, Inst of the Geology of Useful Minerals, Acad Sci Ukrainian SSR, and Paleontological Inst, Acad Sci USSR

DAN SSSR, Vol 90, No 3, pp 465-467

Describes new findings: one track of a deer and two tracks of a perissodactyl animal, evidently a three-toed horse (Anchitherium).

260T46

FLEROV, K. K.

USSR/Geology-Paleontology

Card : 1/1

Authors : Flerov, K. K. Prof.

Title : Picture of the life of hipparions

Periodical : Priroda, 6, 113 - 114, June 1954

Abstract : An imaginary picture is presented on the life of hipparions (Miocene and Pliocene era mammals) assumed to be predecessors of the present day horse. Illustration.

Institution : Acad. of Sc. USSR, Paleontological Museum

Submitted : ....

FLEROV, K. K.
VYALOV, O.S.; FLEROV, K.K.

New finds of fossil remains of vertebrate animals in the Miocene of the Carpathian foothills. Biul.MOIP. Otd.geol. 29 no.2:103-104 Mr-Ap '54. (MLRA 7:7)
(Carpathian Mountains--Paleontology) (Paleontology--Carpathian Mountains)

FLEROV, K.K.

SOKOLOV, I.I.

"Musk deer and reindeer." K.K.Flerov. Reviewed by I.I.Sokolov.
Zool.zhur. 33 no.4:956-959 Jl-Ag '54. (MLRA 7:8)
(Musk deer) (Reindeer) (Flerov, K.K.)

FLEROV,K.K.; TROFIMOV,B.A.; YANOVSKAYA,N.M.; ASTROV,A.V., redaktor; [illegible]ROV,K.K., professor; MULIN,Ye.V., tekhnicheskiy redaktor

[History of mammalian fauna of the quaternary period] Istoriia fauny mlekopitaiushchikh v shetvertichnom periode. [Moskva] Izd-vo Moskvoskogo univ., 1955. 37 p. (MIRA 9:3)
(Paleogeography)

FLEROV, K.K.

Chief features in the development of Quaternary mammals in the Northern hemisphere. Trudy Kom.chetv.per.12:121-128 '55.
(Mammals, Fossil) (MIRA 9:4)

FLEROV, K.K.

ZOLOTAREV, M.A.; PIDOPLICHKO, I.G.; FEDOROV, P.V.; VASIL'YEV, V.N.; IVANOVA, I.K.; GROMOV, V.I.; SOKOLOV, D.S.; ZHIRMUNSKIY, A.M.; PARMUZIN, Yu.P.; PLYUSNIN, I.I.; KATS, N.Ya.; GRICHUK, V.P.; YEFREMOV, Yu.K.; MOSKVITIN, A.I.; LEBEDEV, V.D.; TEODOROVICH, G.I.; ZVORYKIN, K.V.; MIKHNOVICH, V.P.; GALITSKIY, V.V.; MAKEYEV, P.S.; NIKIFOROVA, K.V.; GORDEYEV, D.I.; YANSHIN, A.L.; DUMITRASHKO, N.V.; SHANTSER, Ye.V.; P'YAVCHENKO, N.I.; FLEROV, K.K.; PIDOPLICHKO, I.G., doktor biologicheskikh nauk, professor.

Papers presented at the conference on the history of Quaternary flora and fauna in relation to the development of Quaternary glaciation. Trudy Kom.chetv.per. 12:129-189 '55. (MLRA 9:4)

1.Gidrometeosluzhba (for Zolotarev).2.Zoologicheskiy institut AN USSR (for Pidoplichko).3.Institut okeanologii AN SSSR (for Fedorov).4.Botanicheskiy institut AN SSSR (for Vasil'yev).5.Komissiya po izucheniyu chetvertichnogo perioda AN SSSR (for Ivanova).6.Institut geologicheskikh nauk AN SSSR (for Gromov, Yanshin, Nikiforova, Moskvitin).7.Moskovskiy geologo-razvedochnyy institut imeni Ordzhonikidze (for Sokolov). 8.Akademiya nauk Belorusskoy SSR (for Zhirmunskiy).9.Moskovskiy institut inzhenerov vodnogo khozyaystva (for Plyusnin).10.Geograficheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta (for Yefremov, Parmuzin).11.Moskovskiy gosudarstvennyy universitet (for Lebedev, Zvorykin).12.Institut nefti AN SSSR (for Teodorovich).13.Transproektkar'yer Ministerstva putey soobshcheniya (for Mikhnovich).14.Vsesoyuznyy aerogeologicheskiy trest (for Galitskiy).15.Sovet po izucheniyu proizvoditel'nykh sil AN SSSR (for Makeyev).

(Continued on next card)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413320008-0"

ZOLOTAREV, M.A.----(continued) Card 2.

16.Laboratoriya gidro-geologicheskikh problem AN SSSR (for Gordeyev).
17.Institut geografii AN SSSR (for Dumitrashko, Grichuk).

(Paleontology) (Paleobotany) (Glacial epoch)

FLEROV

FLEROV, Konstantin Konstantinovich; OBRUCHEV, D.V., otv. red.; SABLINA, T.B., red. izd-va; KASHINA, P.S., tekhn. red.

[Dinocerata of Mongolia] Dinotseraty Mongolii. Moskva, Izd-vo Akad. nauk SSSR, 1957. 81 p. (Akademiia nauk SSSR. Paleontologicheskii institut, Trudy, vol. 67). (MIRA 11:1)
(Mongolia--Dinocerata)

TROFIMOV, Boris Aleksandrovich; FLEROV, K.K., doktor biologicheskikh nauk, professor, nauchnyy redaktor; GOLUBKOVA, V.A., redaktor; KHAR'KOV, S.F., tekhnicheskiy redaktor; YUSFINA, N.L., tekhnicheskiy redaktor

[Life in distant ages] Zhizn' v glubinakh vekov. Moskva, Gos. izd-vo kul'turno-prosv. lit-ry, 1957. 148 p. (MLRA 10:8)
(Paleontology)

KRAMARENKO, N.N.; SHIMANSKIY, V.N.; FLEROV, K.K.

All-Union Paleontological Conference on Problems in Systematics and Phylogeny of Fossil Animals. Paleont. zhur. no.2:134-139 '59.
(MIRA 13:1)

(Paleontology--Congresses)

ORLOV, Yu.A., glavnyy red.; MARKOVSKIY, B.P., zam.glavnogo red.; RUZHENTSEV, V.Ye., zamestitel' glavnogo red.; SOKOLOV, B.S., zamestitel' glavnogo red.; EBERZIN, A.G., otv.red.toma; KIPARISOVA, L.D., red.; SHIMANSKIY, V.N., red.; VAKHRAMEYEV, V.A., red.; GEKKER, R.F., red.; GROMOVA, V.I., red.; DAVITASHVILI, L.Sh., red.; KRYMGOL'TS, G.Ya., red.; LUPPOV, N.P., red.; OBRUCHEV, D.V., red.; OVECHKIN, N.K., red.; POKROVSKAYA, I.M., red.; PCHELINTSEV, V.F., red.; RADCHENKO, G.P., red.; RAUZER-CHERNOUSOVA, D.M., red.; RODENDORF, B.B., red.; ROZHDESTVENSKIY, A.K., red.; FLEROV, K.K., red.; FURSENKO, A.V., red.; KHABAKOV, A.V., red.; CHERNYSHEVA, N.Ye., red.; KORDE, K.B., red.izd-va; POLENOVA, T.P., tekhn.red.

[Fundamentals of paleontology; reference book in 15 volumes for paleontologists and geologists of the U.S.S.R.] Osnovy paleontologii; spravochnik dlia paleontologov i geologov SSSR v piatnadtsati tomakh. Moskva, Izd-vo Akad.nauk SSSR. Vol.3. [Mollusks: Loricata, Bivalvia, Scaphopoda] Molliuski - panteirnye, dvustvorchatye, lopatonogie. Otvet.red. A.G.Eberzin, 1960. 299 p.
(Mollusks, Fossil) (MIRA 14:1)

ORLOV, Yu.A., glavnyy red.; MARKOVSKIY, B.P., zam.glavnogo red.; RUZHENTSEV, V.Ye., zam.glavnogo red.; SOKOLOV, B.S., zam.glavnogo red.; SARYCHEVA, T.G., otv.red.toma; VAKHRAMEYEV, V.A., red.; GEKKER, R.F., red.; GROMOVA, V.I., red.; DAVITASHVILI, L.Sh., red.; KRYMGOL'TS, G.Ya., red.; LUPPOV, N.P., red.; OBRUCHEV, D.V., red.; OVECHKIN, N.K., red.; POKROVSKAYA, I.M., red.; PCHELINTSEV, V.F., red.; RADCHENKO, G.P., red.; RAUZER-CHERNOUSOVA, D.M., red.; RODENDORF, B.B., red.; ROZHDESTVENSKIY, A.K., red.; SUBBOTINA, N.N., red.; TAKHTADZHAN, A.L., red.; FLEROV, K.K., red.; FURSENKO, A.V., red.; KHABAKOV, A.V., red.; CHERNYSHEVA, N.Ye., red.; EBERZIN, A.G.; NEVESSKAYA, L.A., red.izd-va; POLENOVA, T.P., tekhn.red.

[Fundamentals of paleontology; manual in fifteen volumes for paleontologists and geologists of the U.S.S.R.] Osnovy paleontologii; spravochnik dlia paleontologov i geologov SSSR v piatnadtsati tomakh. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po geol. i okhrane nedr. Vol.7. [Polyzoa, Brachiopoda. Supplement: Phoronidea] Mshanki, brakhiopody. Prilozhenie: Foronidy. Otvet.red.T.G. Sarycheva. 1960. 342 p. plates. (MIRA 14:4)
(Polyzoa, Fossil) (Brachiopoda, Fossil)
(Phoronidea, Fossil)

FLEROV, K.K.; ZABLOTSKIY, M.A.

Causes of changes in the range of bisons. Biul. MOIP. Otd. biol. 66 no.6:99-109 N-D '61. (MIRA 14:12)
(BISON)

FLEROV, K.K.

Biological and paleozoogeographical characteristics of the Indricotherian fauna. Paleont.zhur. no.1:12-22 '61. (MIRA 14:8)

1. Paleontologicheskiy institut AN SSSR.
(Kazakhstan--Mammals, Fossil)

FLEROV, K.K.

Basic trends in the ecological development of Ruminantia. (MIRA 16:1)
Paleont.zhur. no.4:31-42 '62.

1. Paleontologicheskiy institut AN SSSR.
(Ruminantia) (Evolution)

FLEROV, K.K.; SHEVYREVA, N.S.

Pseudalces, a Pliocene deer from Ciscaucasia. Paleot. zhur. no.3:120-123 '63. (MIRA 16:10)

1. Paleontologicheskiy institut AN SSSR.

ZABLOTSKIY, M.A.; FLEROV, K.K., prof. (Moskva)

Past of the bisons. Priroda 52 no.7:92-95 Jl '63. (MIRA 16:8)
(Bison)

FLEROV, K.K.

Some problems of paleozoogeography. Paleont. zhur. no.3:15-22 '64. (MIRA 18:2)

1. Paleontologicheskiy institut AN SSSR.

BARROW, E.N.

Comparative craniology of present representatives of the genus Bison.
Bull.Mus.Comp.Zool. 70 no.3 [40-54 Jan] '65.

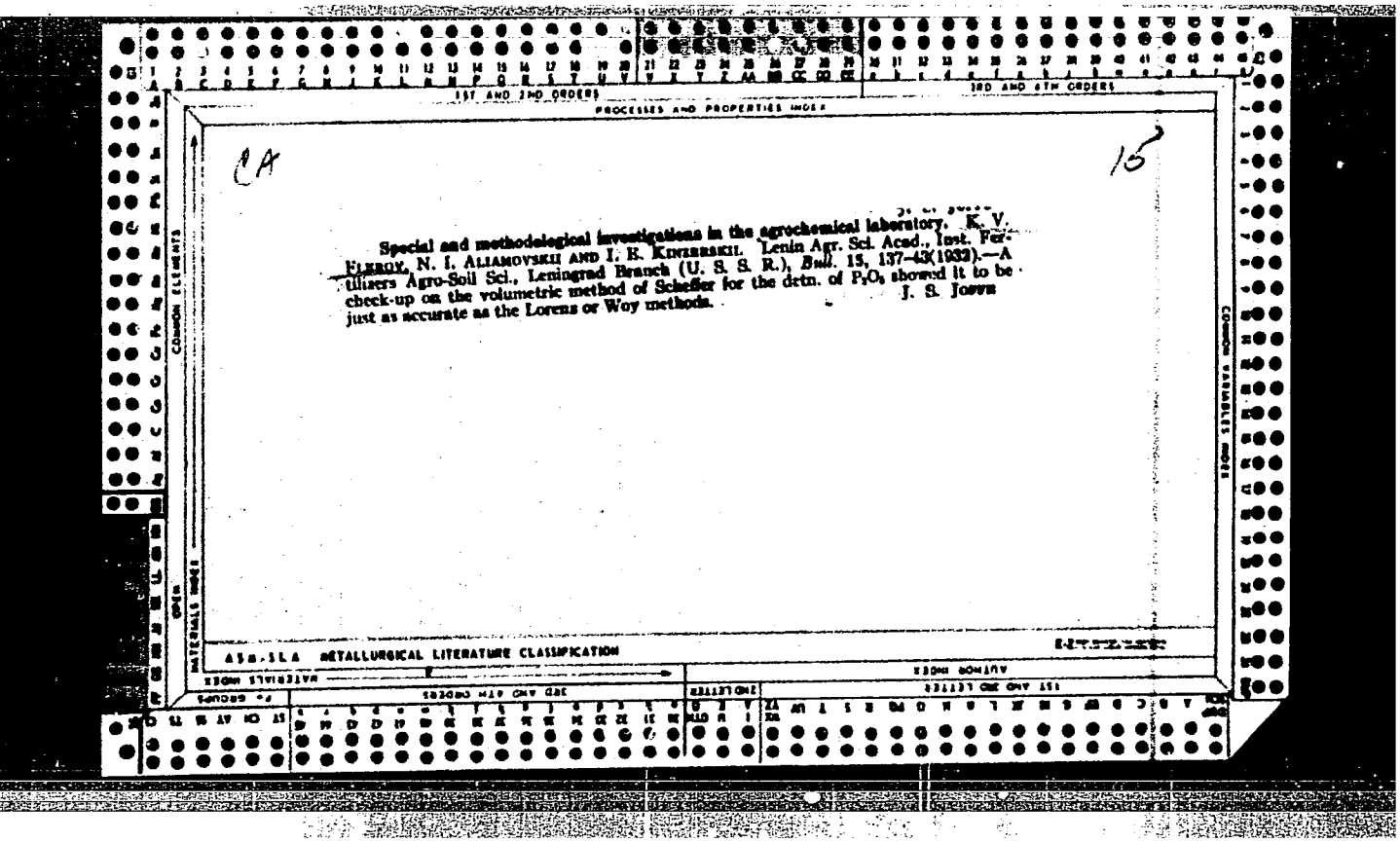
(MIRA 18:6)

FLEROV, K.K., prof.

Distribution of mammals and the landscapes of the past.
Priroda 54 no.3:59-64 Mr '65. (MIRA 18:4)

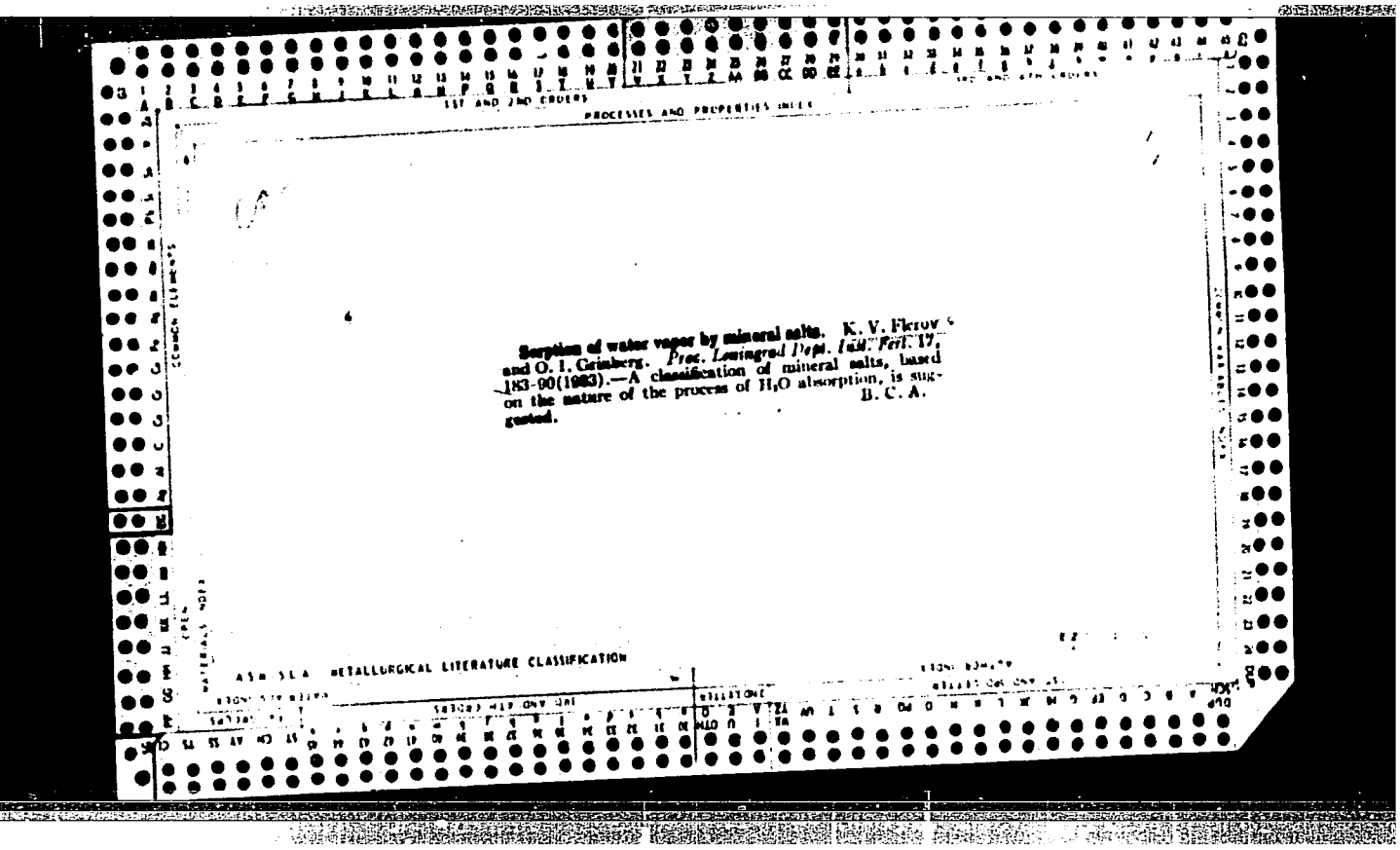
VANGENGEYM, E.A.; FIEROV, K.K.

The moose Alces latifrons in Siberia. Biul. Kom. chetv. per. no.30:166-171 '65. (MIRA 19:2)

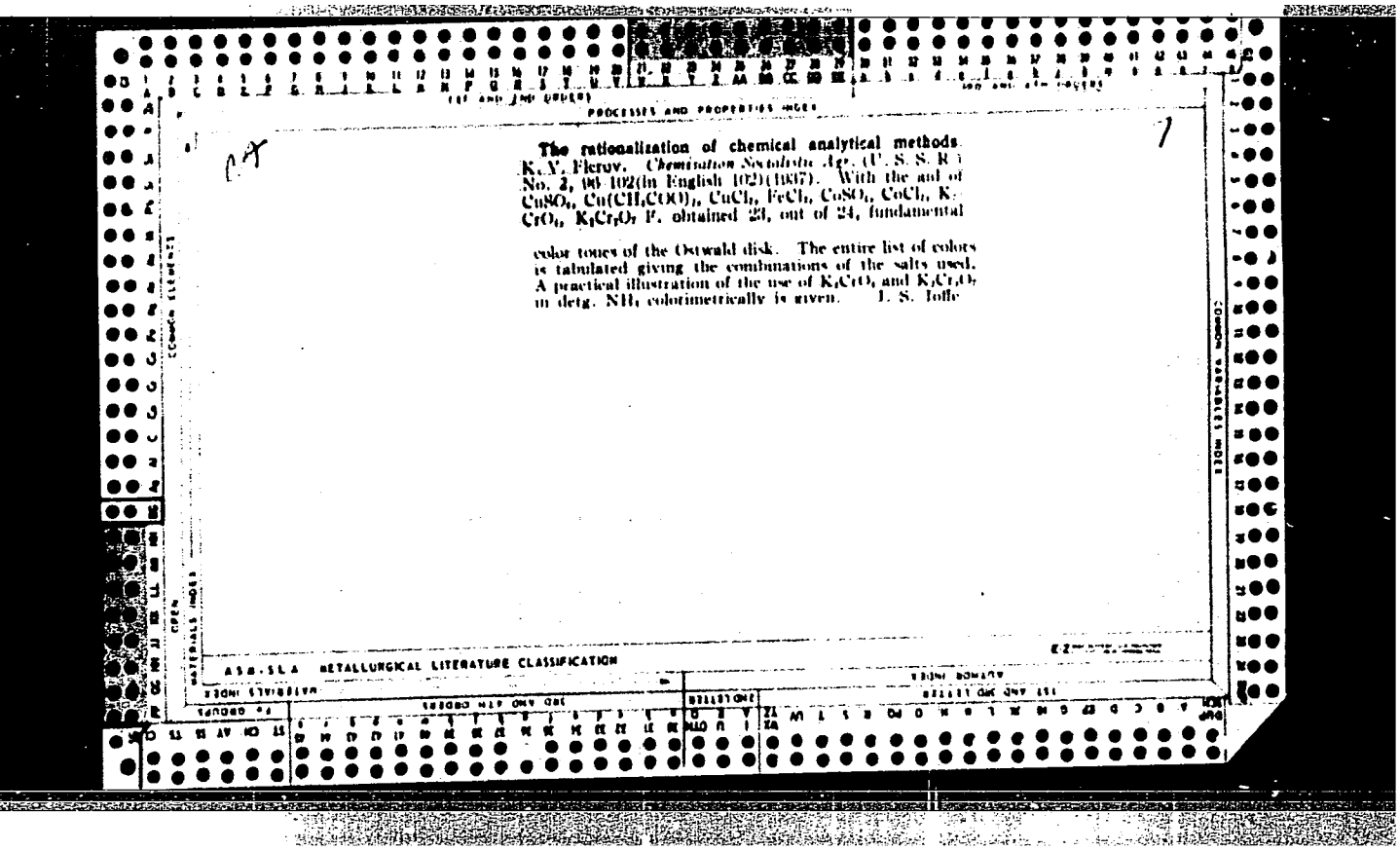


CA 15

Special and methodological investigations in the agrochemical laboratory. K. V. Ellroy, N. I. Aliamovskii and I. E. Kinzebskii. Lenin Agr. Sci. Acad., Inst. Fertilizers Agro-Soil Sci., Leningrad Branch (U. S. S. R.), *Bull.* 15, 137–43(1932).—A check-up on the volumetric method of Scheffer for the detn. of P_2O_5 showed it to be just as accurate as the Lorens or Woy methods. J. S. Joffe



Sorption of water vapor by mineral salts. K. V. Ekrov and O. I. Grinberg. *Proc. Leningrad Dept. Inst. Fert.* 17, 183-90(1983).—A classification of mineral salts, based on the nature of the process of H_2O absorption, is suggested. B. C. A.



PROCESSES AND PROPERTIES INDEX

The rationalization of chemical analytical methods. K. V. Fleruv. *Chemization Socialistic Agr.* (U. S. S. R.) No. 3, 98-102(in English 102)(1937). With the aid of $CuSO_4$, $Cu(CH_3COO)_2$, $CuCl_2$, $FeCl_3$, $CoSO_4$, $CoCl_2$, K_2CrO_4, $K_2Cr_2O_7$ P. obtained 23, out of 24, fundamental color tones of the Ostwald disk. The entire list of colors is tabulated giving the combinations of the salts used. A practical illustration of the use of K_2CrO_4 and $K_2Cr_2O_7$ in detg. NH_3 colorimetrically is given. I. S. Joffe

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION

FLEROV, K. V.

PA 64T34

USSR/Chemistry - Indicators Jan 1948
Chemistry - Hydrogen Ion Concentration

"Determination of the Concentration of Hydrogen Ions by a Nonfading Scale," K. V. Flerov, B. V. Ozimov, Leningrad Chem Technol Inst of the Dairy Ind, 4 pp

"Zhur Obshch Khim" Vol XVIII (LXXX), No 1

Subject scale with mineral salts imitates results obtained from Bogen's universal scale for solutions with 2-10 pH. Accuracy of nonfading scale is ±0.1 pH. This method has proven itself to be a reliable method for judging pH. Submitted 9 Dec 1946.

[redacted] 64T34

FIEROV, K. V.

K. V. Fierov and V. F. Kazimirova, In memory of K. I. Iwbu. P. 1561.
The article contains a list of his works, 61 entries.

March 30, 1948

SO: Journal of General Chemistry (USSR) 28, (90) No. 9 (1948)

CA

Absorption spectra of solutions of organic dyes and of inorganic salts in the red region. K. V. Flerov and B. V. Osimov (Inst. Refrig. and Milk Ind., Leningrad). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 20, 789-93(1950).—Inorg. salt solns. imitating the colors of Bogen indicator (phenolphthalein, methyl red, dimethyl aminobenzene, bromothymol blue, and thymol blue) solns. at pH from 2.4 to 3.2 were prepd. by mixing definite proportions of aq. solns. of $CoCl_2$ and $FeCl_3$, and the absorption spectra compared for solns. appearing to have an identical color either visually or photocolorimetrically. Examples of the compns. of the imitation solns. (in ml. 0.070325 g./l. $CoCl_2$ soln., ml. 0.0071370 g./l. $FeCl_3$ soln., and ml. H_2O) made up by visual estn., are: for pH 2.4, 1.60, 0.15, and 0.25; for pH 3.2, 1.00, 0.20, and 0.20. Spectra of the indicator and the imitation solns. coincide in the range 6900–5100 A., and the coincidence is better with solns. chosen by visual estn. of the color rather than by photocolorimetry with Se cells, on account of the poor red-sensitivity of the latter. N. Thon

FLEROV, K. V.

USSR/Chemistry - Colorimetry Jun 52

"The Effect of Colloids on the Accuracy of Photocolorimetric Analysis," K. V. Flerov, B. V. Ozimov, Leningrad Inst of the Refrigeration and Dairy Ind

"Zhur Prik Khim" Vol XXV, No 6, pp 634-639

The effect of a colloidal dispersion system on photocolorimetric analysis was investigated with colored solns of inorg salts in all ranges of the spectrum. It was shown that the smallest errors occur in colorimetry of solns with high absorption (in the region of red, blue and violet) and the greatest errors in those with low adsorption (yellow)

218T35

USSR/Chemistry - Colorimetry (Contd) Jun 52

With increasing concn of the colored soln, the measurement error in the presence of a small quantity of colloid decreases. In colorimetry of similar solns, optimum conditions must be established, i.e., the concn must be chosen so as to reduce the error to zero.

218T35

FLEROV, K. V.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Analytical Chemistry

Effect of colloids on the accuracy of photocolorimetric analysis. K. V. Flerov and B. V. Ozimov. *J. Appl. Chem. (U.S.S.R.)* 25, 1133–10(1952)(Engl. translation).—See *C.A.* 47, 12098c.

H. L. H.

9-2-54

Sensitivity of a selenium cell to red solutions. B. V. Ormsy and K. V. Fiedov (Inst. Refrig. Dairy Ind., Leningrad). *Zhur. Prikl. Khim.* 27, 209–12(1954). cf. *C.A.* 45, 2723b.—The red-sensitivity of a Se cell was detd. and found satisfactory for photocolorimetry with: Congo red, methyl red, cresol red, phenol red, methyl orange, fuchsin, and $KMnO_4$. It was most sensitive to the first and least to the last. It was more sensitive to the red of methyl orange (pH 3.1, 0.05×10^{-4} mol./l.) than to the orange (pH 4.4, 0.25×10^{-4} mol./l.). The greater the mol. wt. the greater the sensitivity except with fuchsin, which might be hydrolyzed at low concns. I. Beneowitz

FLEROV, K.V.

USSR

Sensitivity of a selenium cell to red solutions. B. V. Ozinov and K. V. Flerov. *J. Appl. Chem. U.S.S.R.* 27, 705–7 (1954) (Engl. translation).—See *C.A.* 48, 8084*i*.

H. L. H.

KAMENOGRADSKAYA, O.P.; FLEROV, K.V., prof.,doktor khim.nauk, nauchnyy red. [deceased]; CHEBOTAREV, G.A., otv.red.; ARON, G.M., red. izd-va; SMIRNOVA, A.V., tekhn.red.

[Chemical literature of the U.S.S.R.] Khimicheskaia literatura SSSR. Vol.1, No.3 [Chemistry in publications of the Academy of Sciences of the U.S.S.R., 1936-1937] Khimiia v izdaniiakh Akademii nauk SSSR, 1936-1937. Sostavila O.P.Kamenogradskaia. Predisl. i nauchn.red.K.V.Flerova. Moskva,1958. 568 p. (MIRA 12:3)

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(Bibliography--Chemistry)

ORLOV, Yu.A., glavnyy red.; RAUZER-CHERNOUSOVA, D.M., otv.red.toma; FURSENKO, A.V., otv.red.toma; MARKOVSKIY, B.P., zam.glavnogo red.; RUZHENTSEV, V.Ye., zam.glavnogo red.; SOKOLOV, B.S., zam.glavnogo red.; VAKHRAMEYEV, V.A., red.; GEKKER, R.F., red.; GROMOVA, V.I., red.; DAVITASHVILI, L.Sh., red.; KRYMGOL'TS, G.Ya., red.; LUPPOV, N.P., red.; OBRUCHEV, D.V., red.; OVECHKIN, N.K., red.; POKROVSKAYA, I.M., red.; PCHELINTSEV, V.F., red.; RADCHENKO, G.P., red.; RODENDORF, B.B., red.; ROZHDESTVENSKIY, A.K., red.; SARYCHEVA, T.G., red.; SUBBOTINA, N.N., red.; TAKHMADZHAN, A.L., red.; FLEROV, K.K., red.; KHABAKOV, A.V., red.; CHERNYSHEVA, N.Ye., red.; EBERZIN, A.G., red.; KOTLYAREVSKAYA, P.S., red.izd-va; MOSKVICHEVA, N.I., tekhn. red.; POLENOVA, T.P., tekhn.red.

[Fundamentals of paleontology; reference book in fifteen volumes for paleontologists and geologists of the U.S.S.R.] Osnovy paleontologii; spravochnik dlia paleontologov i geologov SSSR v piatnadtsati tomakh. Moskva, Izd-vo Akad.nauk SSSR. Vol.1. [General part. Protozoa] Obshchaia chast'. Prosteishie. Otv.red. D.M.Rauzer-Chernousova, A.V.Fursenko. 1959. 481 p. (MIRA 12:7)
(Protozoa, Fossil)

30(7) SOV/26-59-3-11/47

AUTHOR: Flërov, K.K., Professor (Moscow)

TITLE: Across China

PERIODICAL: Priroda, 1959, Nr 3, pp 61 - 70 (USSR)

ABSTRACT: The author describes his impressions gained recently on a trip across China as a member of a delegation of Soviet paleontologists. He outlines the varied vegetational regions, characterizes different cities and the Chinese population and especially stresses the development of Chinese scientific research. He mentions e.g. the Laboratoriya paleontologii pozvonochnykh (Laboratory of the Paleontology of Vertebrates) in Peking, the Mining Institute and Museum of Relics of the Past in **T'ai-yen'**, the Paleontological Institute, Geological Museum and University in Nanking, Botanical Institute of the Academy of Sciences and the University near Kanton, the Meteorological Station ir **Pei-hai**, etc. The names of Chinese scientists mentioned in this article include:

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Across China

Professor **Chu-K'e-cheng** , Vice-President of the Academy of Sciences; Professor **Ch'ung-cheng** , one of the best known paleontologists; **Pei Wen-chung** who discovered the "Peking Man"; Doctor **Min-ch'eng chou**, **Kuo Mo-jo** , President of the Academy of Sciences; Li **Ssu-kuang**, Minister of Geology and Vice-President of the Academy of Sciences.

There are 8 photos.

ASSOCIATION: Paleontologicheskiy institut Akademii nauk SSSR (Paleontologic Institute of the AS USSR)

FLEROV, M.

Practical work in preparing relief forms in the Moscow Province Institute of Advanced Teacher Training. Geog.v shkole 19 no.1: 71-72 Ja-F '56. (MLRA 9:5)
(Relief maps)

24311 FLEROV, N. Kh. K voprosu o mnogoyadernosti kletok pecheni. Trudy Akad. med. nauk SSSR, T. III, 1949, S. 180-181.

SO: Letopis, No. 32, 1949.

24310 FLEROV, N. Kh. Voloknistyye struktury zhivotnogo organizma i ikh opticheskiye svoystva. Trudy Akad. med. nauk SSSR, T. III, 1949, S. 218-22.

SO: Letopis, No. 32, 1949.

FLEROV, N. KH.

"Regenerative and degenerative phenomena in the histogenesis of the transitional epithelium and their physiological significance."
by Flerov, N. Kh. (p. 431)

SO: Journal of General Biology (Zhurnal Obshchei Biologii) Vol. X, No. 6, 1949

FLEROV, N.N.

USSR/Nuclear Physics C-5

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 11208

Author : Flerov, N.N., Talyzin, V.M.

Inst : Not given

Title : Cross Sections of Inelastic Interaction of 14.5 Mev Neutrons With Various Elements.

Orig Pub : Atom energiya, 1956, No 4, 155-157

Abstract : Using a scintillation detector with a stilbene crystal with a variable threshold, measurements were made of the cross section of inelastic interaction between 14.5 Mev neutrons and 24 elements. The source of fast neutrons was the T D reaction. According to data obtained in the work, the cross section of the inelastic interaction between neutrons and nuclei is a monotonic function of the atomic weight and is well described by the formula

Card 1/2

USSR/Nuclear Physics C-5

Abs Jour : Ref Zhur - Fizika, No 5, 1957, 11208

An exception are calcium and the magic nuclei tin, bismuth, and lead.

Card 2/2

AUTHOR: Flerov, N.N., Tamanov, Ye.A. 89-7-8/32

TITLE: The Production of Intense Ion Pulses With a Duration of Less Than 5.10^{-10} Sec (Polucheniye intensivnykh ionnykh impul'sov s dlitel'nost'yu men'she 5.10^{-10} sek)

PERIODICAL: Atomnaya Energiya, 1957, Vol. 3, Nr 7, pp. 44-45 (USSR)

ABSTRACT: Following a suggestion made by N.N. Flerov the authors of this paper applied a method which is analogous to that applied for short electron pulses produced in cyclotrons. When applying this method, the velocity of the ions introduced into the system at different points of time changes in that the ions, after passing through a certain way, are grouped and during a very short interval of time impinge upon a target. The computation showed the following: By means of the system employed by the authors, pulses of a duration of 5.10^{-10} sec can be obtained and in this case the current intensity of the pulse is about a hundred-fold of that without grouping of the ions. If it is possible to decrease the average strength of the current impinging upon the target, considerably shorter pulses (10^{-10} sec and shorter) can be obtained and the current intensity within the pulse can here be increased by the 200-fold and more. The scheme of the experimental order

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is shown in a schematical drawing. A bundle of ions with the energy 200 keV was deflected periodically by a vertical electric field of interaction (with the frequency 5 mc), and then passed through a gap once per period. If the current intensity of the ions in the tube amounts to I_o = 67 microampères, the average strength (at a frequency of 5.10^6 pulses per sec) of the current impinging upon the target amounts to I = 12 microampères, i.e.18% of I_o. When measuring the duration of the pulse the secondary electrons knocked out of the target by the ions were focused on the screen of an oscillographic tube. The application of such short and intensive pulses apparently makes it possible to increase the accuracy of measuring the energy of fast neutrons from the duration of passing through by one order of magnitude (compared to the values hitherto known from publications). If such an apparatus is fitted between an ion source and the acceleration tube of an electrostatic generator, very short and intensive ion pulses of an energy of some millions eV can be obtained. There are 1 figure and 3 references, 0 of which are Slavic.

SUBMITTED: February 22, 1957
AVAILABLE: Library of Congress
Card 2/2 1. Ion pulses - Production 2. Cyclotrons - Operation

Flerov N.N.

AUTHORS Flerov N.N., Talyzin V.M., 89-10-2/36

TITLE Measuring the Absolute Neutron Source Intensity by Comparison with the $T(d,n)He^4$- Reaction.
(Izmereniye absolyutnoy intensivnosti neytronnykh istochnikov sravneniyem s reaktsiyey $(d,n)He^4$- Russian)

PERIODICAL Atomnaya Energiya, 1957, Vol 3,Nr 1o, pp 291-297 (U.S.S.R.)

ABSTRACT For determining the absolute intensity of a neutron source the intensity of the neutrons form the $T(d,n)He^4$ reaction are compared by determination of the absolute number of α-particles. For the purpose of comparing neutron intensities a graphite square block is used in which,from a certain distance of the neutron source located in its center onward, a constant neutron sensitivity is proved to prevail which,within a wide domain, is independent of the initial neutron energy. The sensitivity of the graphite detector is reproducible with 1-2% for the initial energy domain of the neutrons of from 0,1 to 8 MeV. The intensity of the Ra-α-Be-source H^{28} was determined at $(4,78\pm 0,18)\ 1o^5$ n/sec.The intensity of the Ra-γ-Be source H^{29},connected with the intensity measuring of H^{28} results in: $(3,73\pm0,14).1o^5$ n/sec. For the source H^{29} the neutron intensity was determined at $(4,86\pm0,19).1o^5$n/sec.
The results given agree well with other measurements,especially with the Swedish comparative measurements. There are 6 figures, 1 table and 5 Slavic references.

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Card 1/1

21(7) SOV/89-5-6-12/25

AUTHORS: Flerov, N. N., Talyzin, V. M.

TITLE: The Average Number of Neutrons $\bar{\nu}$ in the Fission of U^{235} and U^{238} by Neutrons With an Energy of 14 MeV (Sredneye chislo neytronov $\bar{\nu}$ pri delenii U^{235} i U^{238} neytronami s energiyey 14 Mev)

PERIODICAL: Atomnaya energiya, 1958, Vol 5, Nr 6, pp 653-654 (USSR)

ABSTRACT: If 14 MeV neutrons penetrate through the fissile material, the neutron flux increases. From this increase the $\bar{\nu}$-value is determined. The counter (for fast neutrons), which was described by references 1 and 2, was used as neutron detector. The fissile material (hollow sphere, outer diameter 4 cm, inner diameter 3.4 cm, with an opening of 2.1 cm diameter) was surrounded by a Cd foil (thickness 0.9 mm) and was contained in a brass capsule. One of the specimens was made from natural uranium, the other from uranium containing 90.1 % U^{235}. The $\bar{\nu}$-values were calculated from the formulae derived in references 1 and 2, all necessary correction terms being

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The Average Number of Neutrons $\bar{\nu}$ in the Fission of U^{235} and U^{238} by Neutrons With an Energy of 14 MeV

determined experimentally or taken from other publications. The following results were obtained:

	$\bar{\nu}$	η	
U^{238}	4.50 ± 0.32	2.99 ± 0.15	E_n = 14 MeV
U^{235}	4.13 ± 0.24	3.71 ± 0.20	

η = the average number of secondary neutrons liberated when a uranium nucleus captures a 14 MeV neutron. The results obtained agree well with the latest measurements carried out by N. N. Flerov (Ref 9), G. Blaize (Ref 10). The values obtained by A. N. Protopopov (Ref 11) and by G. N. Smirenkin (Ref 12) are, however, somewhat higher than the measured values. The results obtained were discussed with G. N. Flerov. S. N. Solov'yev took part in the experiments. There are 1 table and 12 references, 9 of which are Soviet.

SOV/89-5-6-12/26

The Average Number of Neutrons $\bar{\nu}$ in the Fission of U^{235} and U^{238} by Neutrons With an Energy of 14 MeV

SUBMITTED: August 7, 1958

Card 3/3

21(7)

AUTHORS: Flerov, N. N., Tamanov, Ye. A. SOV/89-5-6-13/25

TITLE: The Average Number of Neutrons $\bar{\nu}$ Which Are Formed in the Fission of U^{238} Under the Action of Neutrons With Energies of 14 MeV (Sredneye chislo neytronov $\bar{\nu}$, obrazuyushchikhsya pri delenii U^{238} pod deystviyem neytronov s energiyey 14 MeV)

PERIODICAL: Atomnaya energiya, 1958, Vol 5, Nr 6, pp 654 - 656 (USSR)

ABSTRACT: In the present paper (of 1955) $\bar{\nu}$ was determined from the number of measured double-coincidences of neutrons formed during a fission process. As determination of the absolute sensitivity of the detector is difficult, the exact known number of neutrons of the reaction (n,2n) in Pb is measured simultaneously for the purpose of comparison when determining $\bar{\nu}$.

The measuring apparatus consisted of a cubic vessel containing water, in the center of which the part of an ion accelerator tube shaped like a hollow sphere (tritium target) was located (14 MeV neutrons). This part, in addition, contained the uranium and lead samples. At a distance of 14,5 cm from the center of the hollow sphere 6 BF_3-counters were fitted

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(length 26 cm, diameter 2,8 cm, B^{10}-enrichment 71,6 %). In this distance the effectivity of the tube counter with respect to the recording of neutrons of Ra -γ- Be, Na -γ- Be, Ra -α- -Be sources was equal with an accuracy of ± 10 %.
The hollow spheres of uranium and lead had an outer diameter of 6,4 and 8,5 cm respectively. The centers of samples and targets coincide.
The pulses of the 6 BF_3-counters are amplified, formed, and conveyed to a rejector system which is opened by the same pulses to 100 μs in each case, the pulses in each case being shifted by 15 μs. Thus, the first impinging neutron (produced either by fission or by the (n,2n)-reaction) opens the rejector circuit without, however, being able to pass through it. The next neutron, which arrives in an interval of 15 - 115 μs after the first, passes through the rejector circuit and is recorded as being coincident with the first neutron. Two or more pulses, which pass through during the same time, are counted as only 1 pulse. For the purpose of recording the

chance coincidences, a second similar rejector circuit is provided, in which the time of 15 μs is replaced by one of 1500 μs.

After carrying out all necessary corrections, the value $4,45 \pm 0,35$ is obtained for $\bar{\nu}$. This value agrees very well with the data obtained by N. N. Flerov (Ref 1) and S. Blaize (Ref 9).

G. N. Flerov took part in the work in the capacity of adviser. The results obtained were discussed with V. M. Talyzin. There are 1 figure, 1 table, and 10 references, 4 of which are Soviet.

SUBMITTED: August 7, 1958

21(7)

AUTHORS: Flerov, [redacted] Berezin, A. A., SOV/89-5-6-14/25
Chelnokov, I. Ye.

TITLE: The Fission Cross Section of U^{238} for Neutrons With an Energy of 14.6 MeV (Secheniye deleniya U^{238} neytronami s energiyey 14.6 Mev)

PERIODICAL: Atomnaya energiya, 1958, Vol 5, Nr 6, pp 657-657 (USSR)

ABSTRACT: For the measurements carried out in 1952 a thin-walled ionization chamber was used. A platinum foil was fastened to one of its electrodes, upon which a natural layer of uranium was applied electrolytically. This uranium layer had a diameter of 7.2 cm and a surface density of 0.5 mg/cm^2. The quantity of uranium was measured by weighing and by counting α-activity. The results obtained agree with an accuracy of $\pm$ 1 % . The ionization chamber was placed at a certain distance from a tritium target, which was located in an ion-acceleration tube. The deuterons were accelerated up to 140 keV . The construction of the α-counter and the method of absolute measurement of the neutron flux is described more in detail by reference 2 .

Card 1/2 After carrying out a number of corrections which take the

background, the absorption of the fission fragments in the sublayer, and the inelastic scattering on the walls of the tritium target and on the walls of the ionization chamber into account, the following expression was found for E_n = 14.6 MeV :

$$\sigma_f = (1.13 \pm 0.05)\ b$$

These values agree well with the data obtained by R. K. Smith and R. L. Henkel (Ref 3). There are 1 figure and 3 references, 2 of which are Soviet.

SUBMITTED: August 7, 1958

21(7)

AUTHORS: Flerov, N. N., Talyzin, V. M. SOV/89-5-6-15/25

TITLE: Measurement of the Reaction Cross Section (n, 2n) in the Interaction of Neutrons With an Energy of 14 MeV With Beryllium, Lead, and Bismuth (Izmereniye secheniy reaktsii (n, 2n) pri vzaimodeystvii neytronov s energiyey 14 Mev s berilliyem, svintsom i vismutom)

PERIODICAL: Atomnaya energiya, 1958, Vol 5, Nr 6, pp 657-659 (USSR)

ABSTRACT: A graphite prism, which is described in detail by reference 1, was used as detector of fast neutrons. In the center of the prism the tritium target of an ion-accelerating tube was located. In a distance of 70 cm from the target, the thermal neutron flux was mesured by means of a BF_3-tube counter. This detector (cf. Ref 1) is of constant sensitivity within the energy range of neutrons of from 0.1 to 8 MeV. The (n, 2n) cross sections were calculated from the ratio between the counting rates with and without a spherical sample. The outer diameter of the lead- and bismuth samples was 12.5 cm; the inner diameter was 4.5 cm. In the beryllium sample the corresponding values were 6.7 and 3 cm respectively. A hole of 2.2 cm was drilled into each of the samples. The

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Measurement of the Reaction Cross Section (n, 2n) in the Interaction of Neutrons With an Energy of 14 MeV With Beryllium, Lead, and Bismuth

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following values were measured:

	Be	Pb	Bi
σ_{in} in b	0.64 ± 0.02	2.54 ± 0.05	2.59 ± 0.03
$(\sigma_{n,2n} - \sigma_c)$ in b	0.54 ± 0.06	2.30 ± 0.19	2.42 ± 0.20
$\sigma_{n,2n}$ in b	0.55 ± 0.06	2.30 ± 0.19	2.42 ± 0.20
γ	0.149 ± 0.004	0.330 ± 0.007	0.303±0.007
η	1.84 ± 0.09	1.91 ± 0.08	1.93 ± 0.03

$\gamma = \frac{N_1}{N_o} - 1$

N_1 - counting rate with sample

N_o - counting rate without sample

η - average number of secondary neutrons produced by a 14 MeV neutron capture.

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Measurement of the Reaction Cross Section (n, 2n) in the Interaction of Neutrons With an Energy of 14 MeV With Beryllium, Lead, and Bismuth

SOV/89-5-6-15/25

For beryllium $\sigma_t = 1.42 \pm 0.02$ b (good agreement with data supplied by references 3-7).
The $\sigma_{n,2n}$-values for Pb and Bi agree well with those of reference 10, but badly with those of reference 13. There are 2 tables and 13 references, 4 of which are Soviet.

SUBMITTED: August 5, 1958

Card 3/3

S/089/60/010/001/010/020
B006/B063

21.5300 (2816, 1033, 1138)

AUTHORS: Flerov, N. N., Talyzin, V. M.

TITLE: The Mean Neutron Numbers ν and η in U^{233} and Pu^{239} Fission by 14-Mev Neutrons

PERIODICAL: Atomnaya energiya, 1960, Vol. 10, No. 1, pp. 68-69

TEXT: Following a series of reports on measurements with a fast-neutron detector (graphite prism), this "Letter to the Editor" deals with measurements of the mean numbers of neutrons which were produced by the fission of U^{233} and Pu^{239} nuclei induced by 14-Mev neutrons. If $N_1/N_0 = 1 + \gamma$ (N_1 and N are the counting rate of the detector with and without a specimen, respectively), then one obtains $1+\gamma = \exp(-n\sigma_{in}l) + (k_1/k_0)(1-\exp(-n\sigma_{in}l))\eta(1+\beta)$ for a spherical specimen having a wall thickness l and n nuclei per cm^3. σ_{in} is the inelastic interaction cross section; k_0 and k_1 denote the sensitivity of the detector to 14-Mev

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neutrons and neutrons produced by inelastic processes, respectively; the coefficient $1+\beta$ considers the increase in the number of neutrons due to a fission induced by secondary neutrons. From this, one obtains the relation: $\eta = \alpha(1 + \gamma/[1-\exp(-n\sigma_{in}l)])$, where $\alpha = k_o/k(1+\beta)$. If it is assumed that primarily (n,2n) and fission reactions take place, $\eta = (\bar{\nu}\sigma_f+2\sigma_{n,2n})/\sigma_{in}$ (σ_f and $\sigma_{n,2n}$ denote the respective cross sections) and $\bar{\nu} = (\eta-2)(\sigma_{in}/\sigma_f)+2$ will hold. The cadmium container with the specimens - hollow spheres with an internal diameter of 3.4 cm and an external diameter of 4 cm - was put in a brass container which was then introduced into the center of the cavity such that the center of the specimen coincided with that of the target. The neutron flux was determined from the number of alphas produced by the $T(d,n)He^4$ reaction. Results are tabulated. For U^{233} and Pu^{239}, σ_{in} was equal to (2.85 ± 0.10)b, and σ_f was very close to this value: $\sigma_{in}-\sigma_f = (0.2\pm0.1)$ b for U^{233} and $\sigma_{in}-\sigma_f = (0.1\pm0.1)$b for Pu^{239}. There are 1 table and 9 references: 8 Soviet and 1 US.

The Mean Neutron Numbers ν and η in U^{233} and Pu^{239} Fission by 14-Mev Neutrons

S/089/61/010/001/010/020
B006/B063

SUBMITTED: May 17, 1960

Изотопы	1+γ	1+β	η	ν
U^{233}	1,155± ±0,003	1,116± ±0,008	4,07± ±0,22	4,23± ±0,24
Pu^{239}	1,147± ±0,003	1,116± ±0,010	4,53± ±0,25	4,62± ±0,28

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41396

S/089/62/013/004/003/011
B102/B108

24.6730

AUTHORS: Voronkov, R. M., Pevzner, M. I., Flerov, N. N., Arcf'yev, A. V., Basalayev, M. I., Korolev, V. M., Moskalev, S. S., Osipov, V. P.

TITLE: 30-Mev linear electron accelerator designed for neutron spectroscopy

PERIODICAL: Atomnaya energiya, v, 13, no. 4, 1962, 327 - 336

TEXT: The accelerator, designed by the Radiotekhnicheskiy institut AN SSSR (Radio Engineering Institute AS USSR) and used for neutron spectroscopy at the Ordena Lenina Institut atomnoy energii im. I. V. Kurchatova AN SSSR (Lenin Order Institute of Atomic Energy imeni I. V. Kurchatov AS USSR), is a traveling-wave accelerator which produces a pulsed electron beam with an energy of 30 Mev and a current of up to 500 ma. It operates on 2764 Mc/sec at a pulse repetition frequency of 100 cps and with pulse durations of 0.6, 0.2, or 0.05 μsec. At the input of the diaphragmed waveguide there is a field of 150 kv/cm. The efficiency of h-f energy conversion is 30-35%. The maximum h-f power for λ = 10.8 cm is 20 Mw. The diaphragmed waveguide

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was designed as a homogeneous system with constant phase velocity (Fig. 2). Each of its six cells has four 4-mm openings to improve the evacuation of the system. The h-f power from the generator is fed to the accelerator through a standard square feeder waveguide (54 by 72 mm, 6 m long) wherein H_{10}-type waves are excited. This waveguide is enclosed on each side by glass windows of circular conical shape. The h-f generator is an unsoldered klystron equipped with a titanium getter and fed by a thyratron modulator. The modulator is fed with direct current from a rectifier with a voltage regulator at its primary winding. Modulator and klystron are connected by a 65-Mw pulse transformer (boost 4.63). The klystron operates at a maximum voltage of 320 kv. Its h-f excitation is made by a magnetron with a power of 10-15 kw. To prevent h-f breakdown in the klystron, its voltage supply is cut off automatically when excess currents amount to 30%, or if an h-f breakdown occurs in the accelerator part. The pulsed injection current is supplied by a three-electrode electron gun designed similarly to Pierce's double-electrode gun (Fig. 6). The vacuum system of the accelerator is connected to three titanium ion getter pumps as designed by the Fiziko-tekhnicheskiy institut AN USSR (Physicotechnical Institute AS UkrSSR). The necessary operating vacuum of $(2-4)\cdot10^{-6}$ mm Hg can be created

30-Mev linear electron ...

by one such pump and the three ensure continuous operation for 10-12 hrs a day during three to four months. A set of mechanical pumps is used as a forepump (10^{-2} to 10^{-3} mm Hg). The controls and switch gear are installed in a separate building. The accelerated electron beam is focused onto a U^{238} target in a water pool. The bremsstrahlung which occurs in the target produces neutrons by (γ, n) or (γ, f) reactions. The neutrons of ~1.5 Mev have Maxwellian energy distribution. The yield is 10^{14} neutrons per sec. The entire unit is enclosed by a concrete shield (1.5 m thick) provided with several experimental channels (100, 200, and 300 mm wide)(Fig.7). The current, spectrum, pulse shape, and radial distribution of the current density of the electron beam were measured. Numerical data are given for time of flight and background. There are 9 figures and 2 tables.

SUBMITTED: Dezember 18, 1961

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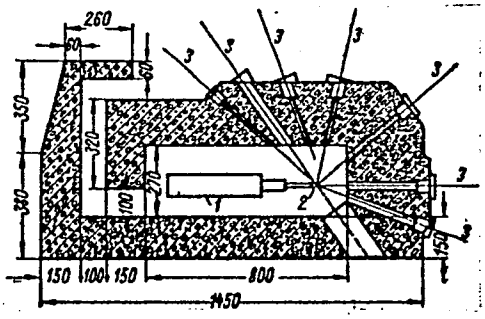
S/089/62/013/004/003/011
B102/B108

30-Mev linear electron ...

Table 1.

(1) pulse duration, μsec;	0,6		0,2		0,05	
(2) pulse current, ma;	160	250	160	320	160	500
(3) $E_{el,max}$, Mev;	27,5	25,0	31,5	25,0	32,0	29,0
(4) relative neutron yield.	9	10	3;5	6	1	2,5

Fig. 7. Shielding system.
Legend: (1) accelerator; (2) target; (3) experimental channels.



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30-Mev linear electron ...

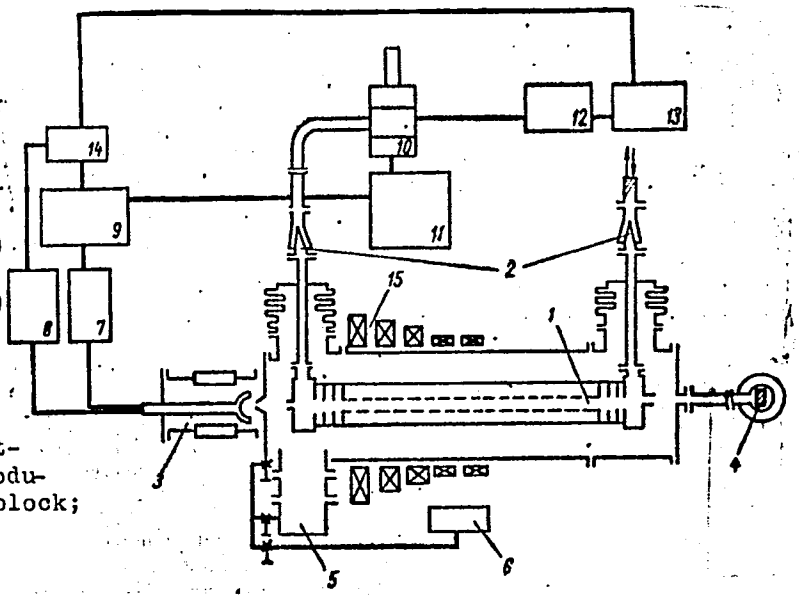

Fig. 1. Block diagram of accelerator. Legend: (1) accelerator tube; (2) waveguide windows; (3) electron gun; (4) target with moderator; (5) titanium pump; (6) forepumps; (7) pulse transformer guns; (8) gun modulator; (9) klystron modulator; (10) klystron; (11) pulse transformer of klystron; (12) magnetron; (13) magnetron modulator; (14) starting block; (15) focusing coils.

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30-Mev linear electron ...

Fig. 6. Electron gun.
Legend: (1) anode, (2) electrode near the cathode; (3) grid; (4) cathode.

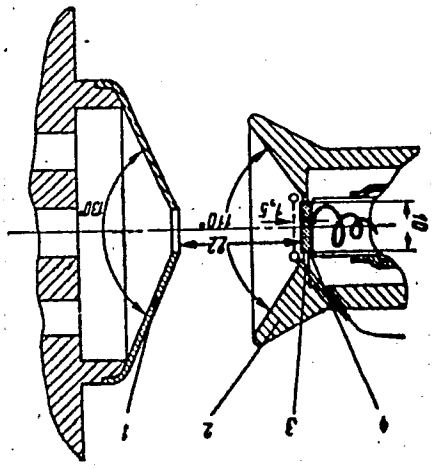
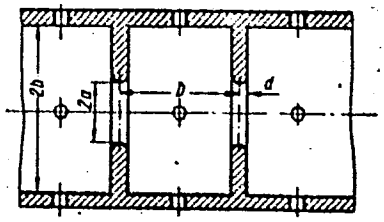


Fig. 2. Diaphragmed waveguide section. D = 27 mm, 2a = 30 mm, a/λ = 0.14, 2b = 86 mm, d = 6.4 mm, overall length 400 cm, wall thickness 7 mm.



Card 6/6

L 2344-66 EWT(1)/EWP(m)
ACCESSION NR: AT5022113 UR/3136/64/000/614/0001/0019

AUTHORS: Flerov, N. N.; Lipatov, V. P.; Aref'yev, A. V.

TITLE: Redesign of a linear electron accelerator of the Institute for Atomic Energy

SOURCE: Moscow. Institut atomnoy energii. /Doklady/, IAE-614, 1964. Rekonstruktsiya lineynogo uskoritelya elektronov Instituta atomnoy energii, 1-19

TOPIC TAGS: linear accelerator, neutron source, electron accelerator, uranium, heavy water moderator, neutron flux, stability, neutron pulse

ABSTRACT: The linear electron accelerator of the Institut atomnoy energii im. Kurchatova (Institute for Atomic Energy) was redesigned. It was originally built in 1960 to serve as a pulsed neutron source for various experiments dealing mainly with time-of-flight neutron spectroscopy. From the time of its installation the performance of the machine left much to be desired. Its neutron flux was too low, and the stability and reliability of the triode injector were unsatisfactory. In the redesigned machine, the neutron flux was increased by a factor of 10, and the stability of the machine was considerably increased. These improvements were realized by: 1) increasing the impulse frequency; 2) exchanging the lead target for a uranium-heavy water moderated target; 3) replacing the KIUIM klystron by an improved version of an Avrora P klystron; 4) stabilizing the power supply to the

Card 1/3

magnetron modulator; 5) regulating the power supply of the thyratron heaters; 6) controlling the electron trajectory by corrective magnetic fields generated by suitable solenoids distributed along the electron path; 7) redesigning the electron injector. Schematics of the klystron modulator, uranium target, triode injector and impulse injector power supply are on Fig. 1. M. I. Basalayev and colleagues of the RTI took part in the redesign. Orig. art. has: 8 graphs. 44,55

ASSOCIATION: Institut atomnoy energii im. I. V. Kurchatova (Institute for Atomic Energy)

SUBMITTED: 00 ENCL: 01 SUB CODE: NP

NO REF SOV: 010 OTHER: 002

L 2344-66
ACCESSION NR: AT5022113

ENCLOSURE: 01

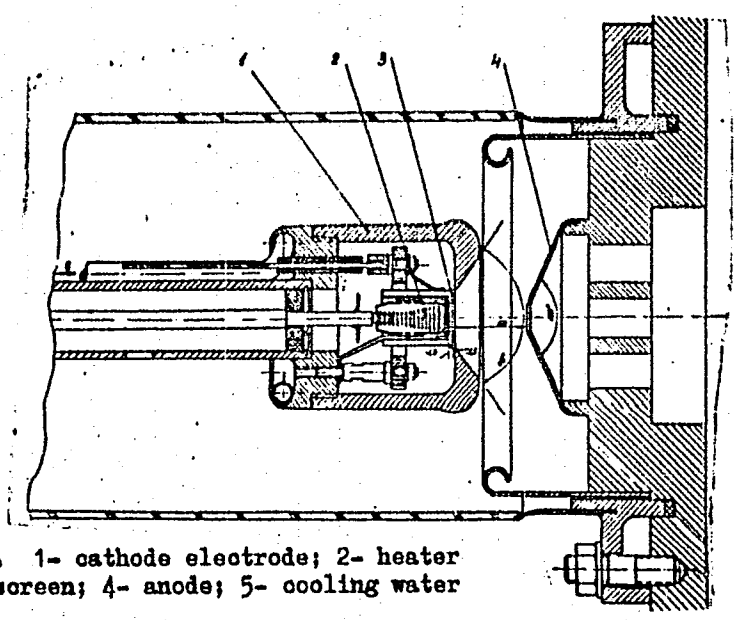


Fig. 1. Triode injector. 1- cathode electrode; 2- heater and cathode of LaB_6; 3- screen; 4- anode; 5- cooling water

Card 3/3

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